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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/806,560	03/23/2004	Weirong Wang	5260-000201/US	2572

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EXAMINER

MULLINS, BURTON S

ART UNIT PAPER NUMBER

2834

DATE MAILED: 11/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/806,560

Applicant(s)

WANG ET AL.

Examiner

Burton S. Mullins

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 October 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 24-32 and 34-59 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 35-43 is/are allowed.
- 6) ☒ Claim(s) 24-27, 29, 34, 44-46, 48, 49, 51-57 and 59 is/are rejected.
- 7) ☒ Claim(s) 28, 30-32, 47, 50 and 58 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. Applicant's arguments in the request for consideration filed 16 October 2006 with respect to Sheeran have been fully considered and are persuasive. The rejections under 35 U.S.C. 102 and 103 over Sheeran and the finality of the previous office action have been withdrawn. New art has been applied.

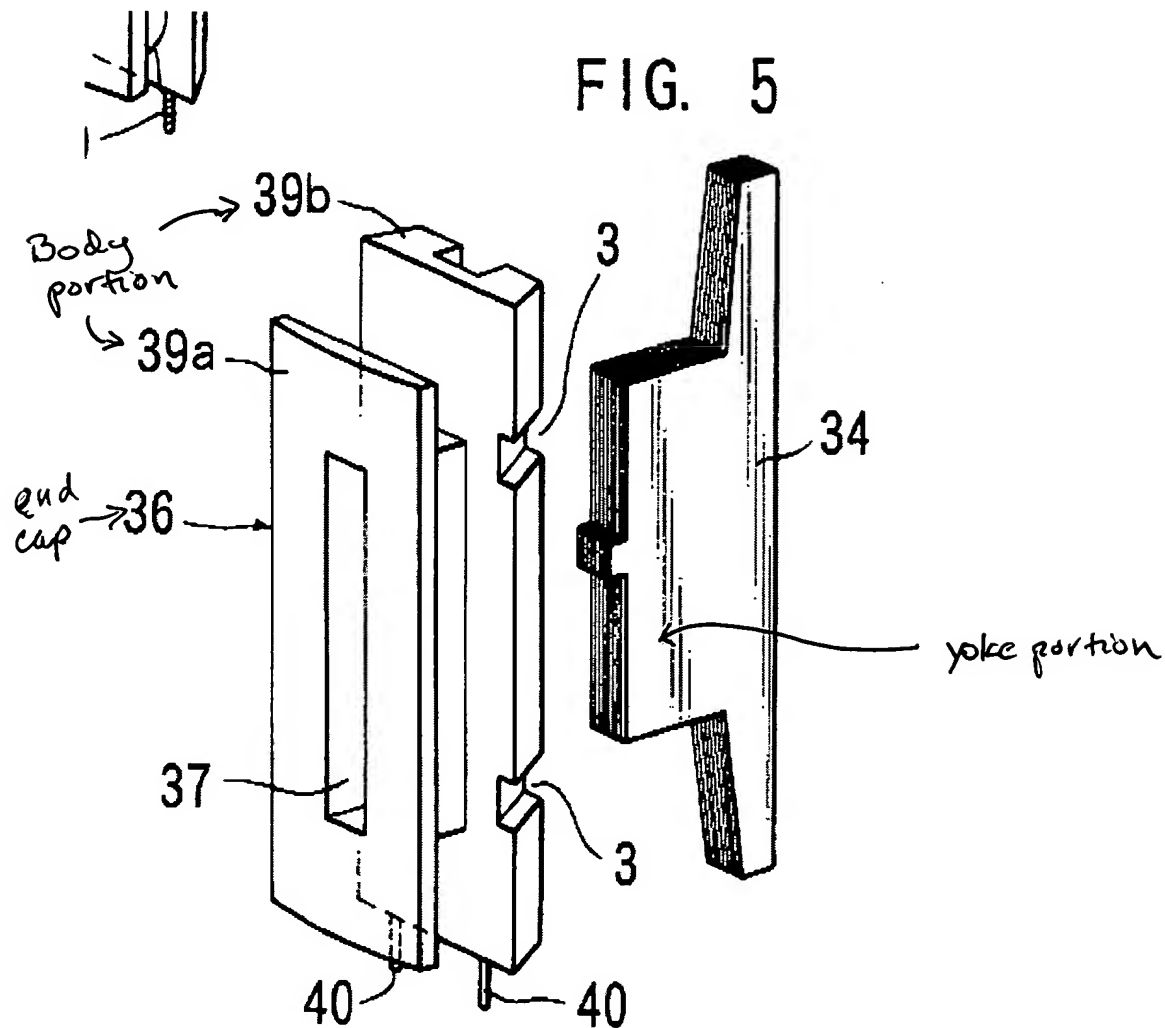
Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claim 24-27, 29, 34, 44, 46-49, 51-53, 57 and 59 are rejected under 35 U.S.C. 102(b) as being anticipated by Suzuki et al. (US 6,177,751). Suzuki teaches an end cap comprising bobbin 36 (Fig.3) of an electromagnetic machine having a stator 6 with a plurality of adjacent segments 34 (salient poles of yokes 32; Figs.2-5), the end cap 36 including a body portion (collar portion 39a/39b generally surrounding hole 37; Fig.5) configured for positioning on a yoke portion (not numbered, extension of salient pole 34) of one of the adjacent segments 34 (Fig.5), the body portion 39 having first and second ends (left and right sides of the collar 39; Figs.6&7; c.4, lines 30-36) configured to couple to ends on adjacent end caps 36 to substantially hold the adjacent segments together (projections and depressions on both edge portions of the collar allow for engagement of the end caps/bobbins 36 with one another; c.4, lines 30-36; Figs.6-7&9).



Regarding claim 25, the projection on one end and depression on the other end comprise first and second couplings (Figs.6-9).

Regarding claim 26, plural adjacent end caps 36 are adjustably aligned and coupled together by means of the couplings on each end cap.

Regarding claims 27 and 29, the projection comprises a 'male member', the depression the 'female member', with the female member forming a 'snap slot' 45 in the second end in the embodiment of Fig.9 (c.4, lines 51-52).

Regarding claim 34, Suzuki teaches a stator having a plurality of adjacent segments 34; a plurality of end caps 36, each end cap having a body portion (collar) 39 positioned on a yoke portion (not numbered, Fig.5) of one of the adjacent segments and having first and second ends (Fig.5), and means for coupling the first and second ends of the adjacent end caps 36 to substantially hold the adjacent segments 34 together (projections and depressions on both edge portions of the collar 39 allow for engagement of the end caps/bobbins 36 with one another, which therefore holds the adjacent segments 34 together; c.4, lines 30-36; Figs.6-7&9).

Regarding method claims 44, 46, 48-49, 51-53 and 49, Suzuki teaches the method since the elements of a stator having a plurality of segments 34 and a plurality of end caps 36, where the end caps are positioned on each of the segments 34, each end cap 36 having a body portion 39 for engaging a yoke portion of one of the segments 34 (Figs.4&5), each body portion having opposing ends (Fig.5); ends of the segments 34 positioned adjacent one another (Fig.2), with the segment ends substantially held together by coupling means (projections and depressions, Figs.6-9) coupling ends of the adjacent end caps 36 together.

Regarding claim 46, the projections and depressions comprise male and female members.

Regarding claim 48, since the projections and depressions are arranged parallel to the axis, some movement at the coupled ends of the end caps 36 is permitted.

Regarding claim 49, an interference fit is formed by the coupled projections and depressions, per Figs.6-9.

Regarding claim 51, each segment 34 has opposing surfaces, a yoke portion, a tooth portion, and a pole end (Figs.2-5); also, note windings on the segments 34 (Figs.2-4). The end caps 36 are on the tooth portions with an interference fit (Fig.3).

Regarding claim 52, the projections and depressions are on either side of the tooth portion of segment 34 (Figs.4-5&7).

Regarding claim 53, the collar 39b covers the outboard surface of each pole ends with legs formed by the collar 39b (Figs.4-5&7).

Regarding claim 57, the coupling of the projections with the depressions holds ends of adjacent segments 34 together (Figs.2&6-9).

Regarding claim 59, the embodiment of Fig.9 comprises a deformable male member on one end and a female member (slot) 45 on the other end, the deformable male member configured for "snap fitting" into female member 45.

4. Claims 24-27, 29, 34, 44, 46, 48-49, 51-55, 57 and 59 are rejected under 35 U.S.C. 102(b) as being anticipated by Sato (JP 2001-008395). Sato teaches an end cap (insulator) 4 (Fig.3) of an electromagnetic machine having a stator with a plurality of adjacent segments 1 (Figs.1&2), the end cap 4 including a body portion (outer and inner walls) 6/7 configured for positioning on a yoke portion 1a/1b of one of the adjacent segments (Fig.3), the body portion 6 having first and second ends (Fig.3) configured to couple to ends on adjacent end caps 4 to substantially hold the adjacent segments together (projections and depressions 10/9 on either side of the wall 7 engage respective projections and depressions of adjacent end caps; abstract Figs.1-3).

Regarding claim 25, the projection on one end of wall 7 and depression on the other end comprise first and second couplings (Fig.3).

Regarding claim 26, plural adjacent end caps 4 are adjustably aligned and coupled together by means of the couplings 9/10 on each end cap wall 7.

Regarding claims 27 and 29, the projection 10 comprises a 'male member', the depression 9 the 'female member', with the female member forming a 'snap slot' 45 in the sense that it fits into the male member 10.

Regarding claim 34, Sato teaches a stator having a plurality of adjacent segments 1; a plurality of end caps 4, each end cap having a body portion (6, 7 or 8; Fig.3) positioned on a yoke portion 1a/1b of one of the adjacent segments 1 and having first and second ends (Fig.3), and means 9/10 for coupling the first and second ends of the adjacent end caps 4 to substantially hold the adjacent segments together (abstract).

Regarding method claims 44, 46, 48-49, 51-55 and 57, Sato inherently teaches the methods since all the elements are disclosed. In particular, the coupling means 9/10 allows for parallel movement (claim 48) and interference fit (claim 49). Note end caps 6 and 8 on opposing surfaces of segments 1 and wire 12 (claim 51). Parts of the body portion 6 which fit around flat portion 5 (Fig.3) comprise first and second legs on sides of each tooth (claim 52). Regarding claim 53, outboard (i.e., positioned in the radially outward direction) surfaces of each pole end is covered by the projections 10 and depression 9 (Fig.3). Regarding claims 54-55, note angled slot area defined by angled pole teeth (Figs.1-2); therefore, the end caps are also angled because they cover the teeth. Regarding claim 57, the segments 1 are held together by the projections and depressions 10/9.

Regarding claim 59, the insulator/end cap 4 comprises resin and is thus deformable, so that the projection 10 comprises a deformable male member on one end and the depression 9 a female member on the other end, the deformable male member configured for "snap fitting" into female member because of the deformable nature of the resin end cap.

Claim Rejections - 35 USC § 103

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claims 45 and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato in view of Yamazaki et al. (US 6,127,753). Sato's invention as shown in Figs.1-9 does not teach a ridged end of a segment 1 positioned into slotted end of another segment 1.

Yamazaki teaches in his prior art description (c.1, lines 20-42; Figs.5a-5c) that the core of a motor may be constructed in a serial fashion by connecting core segments 11 using concave grooves (slots) 15 and convex pieces (ridges) 16.

It would have been obvious to modify Sato and provide a ridged and slotted end on each stator segment per Yamazaki to join the segments and form a stator.

Allowable Subject Matter

7. Claims 35-43 are allowed. Regarding claims 35 and 42, neither Suzuki, Sato or the prior art teaches the claimed end cap including, inter alia, the feature that "a portion of the body surface [of the end cap] is positionable against the surface of an adjacent [stator] segment..." In Suzuki and Sato, each end cap body surface contacts the surface of the stator segment upon which it rests, not the surface of an adjacent stator segment. Claim 43 recites a similar feature of "each end cap positioned against the segment surface of one of the adjacent [stator] segments".

8. Claims 28, 30-32, 50 and 58 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claim 28, neither Suzuki, Sato or the prior art teaches that the male member includes a bifurcate catch extending from the first end of the body portion which snap-fits in the female coupling member.

Regarding claim 30, neither Suzuki, Sato or the prior art teaches the particular configuration of the male member is positioned adjacent a slotted end of the stator segment and a female member is positioned adjacent a ridged end of the segment.

Regarding claim 31, neither Suzuki, Sato or the prior art teaches that the ends of the end cap define slots configured for engagement by a clip having a first portion for fitting in one of the slots and a second portion fitting in a slot in an adjacent end cap.

Regarding claim 32, neither Suzuki, Sato or the prior art teaches that “the segment has a surface on which the end cap is positionable, and wherein the end cap further comprises: a slot defined in the first end and having an open side for exposing the surface of the segment, and a finger extending from the second end and having a side substantially positionable on the same plane as the surface of the segment, wherein the finger fits within the slot on an adjacent like end cap with the side of the finger positioned against the surface of the adjacent segment so that the surfaces of the adjacent segments lie substantially on the same plane.”

Regarding method claims 47, 50 and 58, neither Suzuki, Sato or the prior art teaches the steps of: “fitting clips in slots defined in the adjacent ends on the adjacent end caps” (claim 47); or “fitting a portion of each end cap surface against the segment surface of at least one of the adjacent [stator] segments” (claim 50) or “positioning a portion of the surface on each of the end caps against the opposing surface of at least one of the adjacent segments” (claim 58).

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Burton S. Mullins whose telephone number is 571-272-2029.

The examiner can normally be reached on Monday-Friday, 9 am to 5 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached on 571-272-2044. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Burton S. Mullins
Primary Examiner
Art Unit 2834

bsm
25 October 2006